Fox River Task Force
Storage Committee Summary

The Storage committee recommended reviewing options for storage in the Fox River watershed. The Corps of Engineers studied flood storage during the feasibility study from which the hinged crest gates were constructed. Several sites were investigated but no storage options were determined to be economically feasible. Two hypothetical reservoirs were investigated upstream of the Chain of Lakes: 5400 acre-foot storage on 300 acres and 21,600 acre-foot on 1150 acres. Neither option provided significant benefits. The maximum reduction in water surface was 0.3' for the 10-year frequency event. The reservoirs fill before the peak discharge is reached for larger events. A more detailed analysis was needed to determine the benefits and costs of potential reservoirs.

Storage on the Fox River in Wisconsin is limited because flooding begins in Burlington, Wisconsin at elevation 760. Only 20' of elevation change exists between the Illinois/Wisconsin State Line and Burlington, Wisconsin. Several residential areas would be impacted. To analyze potential storage in Wisconsin, several smaller reservoirs would need to be investigate on the larger tributary streams.

A potential reservoir on Nippersink Creek in Illinois upstream of Route 12 was investigated. The land needed to store water to elevation 780 is 3125 acres along with six homes. Preliminary analysis indicates that the reservoir could store 13,100 acre-feet of flood waters. The reservoir would have a dry bottom and would pass all flows up to 200 cfs. The land rights for the reservoir will dominate the cost estimate. If the land could be purchase for $20,000/acre then the reservoir would cost approximately $100 million to construct. If the land would cost $50,000/acre then the reservoir would cost approximately $200 million. Based on the Lake County Forest Preserve purchases, the $200 million estimate appears more accurate.

Using the gage record for Nippersink Creek near Spring Grove, from August 5 -28, 2007, the volume of flows above 200 cfs was 27,200 acre-feet. There would not be enough storage to prevent flood flows on Nippersink Creek for that event. However, the volume of flows for June 5 -19, 2008 was 10,400 acre-feet. This volume could be contained in the potential reservoir. The June 1999 and June 2000 events had peaks almost twice as high as the August 2007 & June 2008 events. These events need to be analyzed to determine the volume and duration of those events.

A very rough estimate of the volume of water needed to be stored to prevent flooding on the Chain of Lakes and the Fox River for the June 2008 is 87,000 acre-feet. The potential Nippersink Creek reservoir would store about 15% of the volume needed to prevent flooding on the Chain of Lakes and Fox River. Several of these reservoirs throughout the watershed would be needed to prevent flooding.

A suggestion was previously made to manage the approximately 500 detention basins in the Fox River watershed. The storage in these ponds would amount to 5000 to 10,000 acre-feet. This storage would have negligible benefits to the Fox River and Chain of

Lakes. These ponds are owned by homeowner associations and do not have control mechanisms so they would need to be retrofitted. More people would be at risk from mismanagement of these facilities if the ponds were fitted with control devices.

Wetland restoration was suggested for storage of runoff based on the benefits to Gurnee on the Des Plaines River. Wetlands would require extensive land to accommodate the volume of storage require to benefit the Fox River and Chain of Lakes. The Des Plaines River watershed is only 123 square miles as it enters Illinois which is about 1/10 the size of the Fox River watershed entering Illinois, about 870 square miles. Wetlands absorb the first 1" of rainfall while the rest of the rainfall would runoff. However, wetlands can be designed to store water on the land providing more than the absorption of the runoff.

Since flood storage options are so expensive, flood proofing and buyouts were discussed. Lake County SMC has funding in their draft FY'09 budget for a survey contract to set benchmarks and survey damaged structures. Surveying of the low points on roads would provide better emergency response. Kane County has given OWR their survey data for their repetitive loss structures. OWR is compiling a GIS product to identify all flood prone structures.

Concerns with the buyout option are:

1. Buyouts are voluntary and not all people are interested in moving;
2. Commercial structures are located in the floodplain, such as marinas;
3. There is a 25% match requirement for Federal Hazard Mitigation Grant Funds; and
4. When elevating homes instead of buyout, loss of access to properties occurs during floods.